

Appl. No. 09/826,575
Supplemental Amdt. Dated December 10, 2004
Reply to Office action of August 16, 2004

Listing of Claims:

1. (Currently amended) An apparatus for testing equipment located in a local environment by presenting a detectable indicator gas therein, said apparatus comprising:

a one-piece, polymeric pump and container portion combination;

a chemical substance stored in said container portion, said substance being reactive with air from the local environment;

a glass enclosure resting within said container portion and surrounding said chemical substance;

wherein said pump is operable to draw air into said container portion and in contact with said chemical substance to generate a detectable indicator gas, wherein said pump ~~is integrally formed as one piece with said container portion such that said pump and said container portion~~ are positioned in fluid communication and define a substantially fluid impermeable internal environment that includes said chemical substance and is sealed from the local environment; and

an outlet to said container that is severable to direct said indicator gas into the local environment.

2. (Currently amended) The testing apparatus of claim 1, ~~wherein said pump is a manually squeezable bulb,~~ wherein said pump is integrally formed as one piece with said container portion.

3. (Currently amended) The testing apparatus of claim ~~[[1]]~~ 2, wherein said pump is selected from the group of manually operable pumps consisting of: a manually squeezable bulb, a bellows-driven pump, a syringe, and combinations thereof.

4. (Canceled)

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5. (Currently amended) The testing apparatus of claim ~~[[1]]~~ 2, wherein said container portion and said pump are formed from a plastic material.

6. (Original) The testing apparatus of claim 5, wherein said plastic material is low density polyethylene.

7. (Currently amended) The testing apparatus of claim ~~[[1]]~~ 2, wherein said container portion is formed from a first material and said pump is formed from a second material distinct from said first material.

8. (Canceled)

9. (Currently amended) The testing apparatus of claim ~~[[1]]~~ 2, wherein said container portion and said pump form a substantially permanent molded structure.

10. (Original) The testing apparatus of claim 1, wherein said chemical substance is reactive with the container environment, upon operation of the pump, to generate said indicator gas.

11. (Original) The testing apparatus of claim 1, wherein said chemical substance is selected such that said chemical substance and air drawn into said container portion generate a scented indicator gas upon contact.

12. (Original) The testing apparatus of claim 1, wherein said chemical substance is reactive with air to produce an irritant gas.

13. (Original) The testing apparatus of claim 12, wherein said chemical substance is liquid SnCl_4 and said indicator gas is an acid vapor fume.

14. (Original) The testing apparatus of claim 1, wherein said chemical substance is reactive with the container environment, upon operation of the pump, to generate a visually detectable indicator gas.

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15. (Original) The testing apparatus of claim 1, wherein said pump has a hole to allow finger release of pressure.

16. (Original) The testing apparatus of claim 1, further comprising an exterior layer of laminate that seals the container.

17-21 (Canceled)

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22. (Currently amended) A method of fit testing respiratory protection equipment in a local environment by presenting a detectable indicator gas therein, said method comprising the steps of:

storing a chemical substance, reactive with air to produce an indicator gas in the form of irritant smoke, in a container formed substantially from a polymeric material;

providing a polymeric squeeze bulb device in operative communication with the container, and formed integrally, as one piece therewith, such that the squeeze bulb device and the container are in fluid communication and define a substantially fluid impermeable internal environment that is sealed from the local environment;

breaking a portion of the container to provide an outlet;

operating the squeeze bulb to draw air past the chemical substance to produce a human detectable indicator gas in the form of irritant smoke;

directing the indicator gas outward of the container and into the local environment; and

detecting the indicator to determine the operability of the equipment in the local environment[[]]; and

wherein said step of providing a polymeric squeeze bulb includes ensuring that said step of operating the squeeze bulb does not generate a smoke volume exceeding a predetermined volume by selecting a polymeric squeeze bulb having a maximum pumping capacity that is below the predetermined volume whereby the selected squeeze bulb is affixed to the container.

23. (Canceled)

24. (Canceled)

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25. (Original) The method of claim 22, wherein the chemical substance is liquid SnCl_4 or H_2SO_4 and said step of operating the squeeze bulb generates a chemical reaction producing an irritant indicator gas.

26. (Original) The method of claim 22, wherein the indicator gas is indicator gas having a pre-selected scent, said observing step including detecting the scent of the indicator gas to determine the operability of the equipment.

27-53 (Canceled)

54-56 (Canceled)

57-63 (Canceled)

64. (Previously presented) The apparatus of claim 1, wherein said chemical substance is reactive with air to generate irritant smoke.

65. (Canceled)

66. (Previously presented) The apparatus of claim 1, wherein said pump and said container portion are joined seamlessly.

67. (Canceled)

68. (Previously presented) The method of claim 22, wherein said storing step includes storing the chemical substance within a substantially fluid impermeable enclosure.

69. (Currently amended) The method of claim 68, wherein said storing step includes storing the chemical substance in a breakable glass enclosure disposed within the container[;and]].

~~wherein said step of operating the squeeze bulb is preceded by a step of breaking the breakable glass.~~

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70. (Previously presented) The method of claim 68, further comprising the step of storing the polymeric squeezable bulb device and container in a substantially fluid impermeable bag prior to said breaking and operating steps.

71. (Canceled)

72. (Canceled)

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73. (New) A method of fit testing respiratory protection equipment in a local environment by presenting a detectable indicator gas therein, said method comprising the steps of:

storing a chemical substance, reactive with air to produce an indicator gas in a container formed substantially from a polymeric material, including storing the chemical substance in a breakable glass enclosure disposed within the container;

providing a polymeric squeeze bulb device in operative communication with the container, such that the squeeze bulb device and the container are in fluid communication and define a substantially fluid impermeable internal environment that is sealed from the local environment;

breaking a portion of the container to provide an outlet;

operating the squeeze bulb to draw air past the chemical substance to produce a human detectable indicator gas;

directing the indicator gas outward of the container and into the local environment; and

detecting the indicator to determine the operability of the equipment in the local environment.

74. (New) The method of claim 73, wherein said providing step includes providing a squeeze bulb integrally formed as one piece with the container.

75. (New) The method of claim 73, wherein the indicator gas is a visually observable gas, said detecting step including visually observing the behavior of the indicator gas in the local environment.

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76. (New) The method of claim 73, wherein the equipment is respiratory protection equipment, and wherein said step of operating the squeeze bulb generates a chemical reaction producing an irritant indicator gas and said step of detecting the indicator determines the fit of the respiratory protection equipment.

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77. (New) A method of fit testing respiratory protection equipment in a local environment by presenting a detectable indicator gas therein, said method comprising the steps of:

storing a chemical substance, reactive with air to produce an indicator gas in the form of irritant smoke, in a container formed substantially from a polymeric material;

providing a polymeric squeeze bulb device in operative communication with the container, and formed integrally, as one piece therewith, such that the squeeze bulb device and the container are in fluid communication storing the polymeric squeeze bulb device and the container in a substantially fluid impermeable bag such that the chemical substance is stored in a substantially fluid impermeable environment;

breaking a portion of the container to provide an outlet;

operating the squeeze bulb to draw air past the chemical substance to produce a human detectable indicator gas in the form of irritant smoke;

directing the indicator gas outward of the container and into the local environment; and

detecting the indicator to determine the operability of the equipment in the local environment.

78. (New) The method of claim 77, wherein the chemical substance is liquid SnCl_4 or H_2SO_4 and said step of operating the squeeze bulb generates a chemical reaction producing an irritant indicator gas.

79. (New) The method of claims 77, wherein said steps of providing a polymeric squeeze bulb includes ensuring that said step of operating the squeeze bulb does not generate a smoke volume exceeding a predetermined volume by selecting a polymeric squeeze bulb having a maximum pumping capacity that is below the predetermined volume whereby the selected squeeze bulb is affixed to the container.

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80. (New) An apparatus for testing equipment located in a local environment by presenting a detectable indicator gas therein, said apparatus comprising:

a one-piece, polymeric pump and container portion combination;

a chemical substance stored in said container portion, said chemical substance being reactive with air from the local environment;

wherein said pump is operable to draw air into said container portion and in contact with said chemical substance to generate a detectable indicator gas, wherein said pump is integrally formed as one piece with said container portion such that said pump and said container portion are in fluid communication;

an outlet to said container that is severable to direct said indicator gas into the local environment; and

a substantially fluid impermeable bag surrounding said polymeric pump and container portion combination, such that said chemical substance is stored in a substantially fluid impermeable internal environment that is sealed from the local environment.

81. (New) The testing apparatus of claim 80, wherein said pump is a manually squeezable bulb.

82. (New) The testing apparatus of claim 80, wherein said chemical substance is reactive with air to produce an irritant gas.

83. (New) The testing apparatus of claim 80, wherein said container portion and said pump are formed from a plastic material.

84. (New) The testing apparatus of claim 80, wherein said container portion is formed from a first material and said pump is formed from a second material distinct from said first material.

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85. (New) A method of manufacturing an apparatus for testing equipment in a local environment by presenting a detectable indicator gas therein, said method comprising the steps of:

selecting a squeeze bulb portion and a container portion;

storing a chemical substance in the container portion that is reactive with air to generate, a detectable indicator gas for presentation into the local environment;

integrally forming, as one piece, the container portion and the squeeze bulb portion, whereby the container portion and the pump are in fluid communication and define a substantially fluid impermeable internal environment that includes the chemical substance and is sealed from the local environment; and

wherein said selecting step includes selecting a squeeze bulb portion having a pumping capacity that is below a predetermined capacity, whereby said integrally forming step forms a one-piece squeeze bulb and container portion apparatus having a maximum pumping capacity below the predetermined capacity.

86. (New) The method of claim 85, further comprising the steps of:

providing a flexible material; and

providing a second material;

wherein said integrally forming step includes using the flexible material and applying the second material adjacent the flexible material to form a laminate therewith, wherein the laminate is substantially more fluid impermeable than the flexible material.

87. (New) The method of claim 86, wherein said step of providing a flexible material includes providing a plastic material.

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88. (New) The method of claim 86, wherein said step of providing a second material includes providing a mylar material.

89. (New) The method of claim 85, further comprising the step of sealing a breakable end tip of the container tube portion located opposite the squeeze bulb.

90. (New) The method of claim 85, wherein said storing step includes storing a chemical substance that, when contacted by air drawn into the container portion, generates an irritant smoke.

91. (New) The method of claim 85, wherein said storing step includes storing the chemical substance within a substantially fluid impermeable enclosure.

92. (New) The method of claim 85, wherein said storing step includes storing the chemical substance in a breakable glass enclosure disposed within the container portion.